

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/24/2010 has been entered.

Election/Restrictions

Claims 1 & 2 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claim 4, directed to the process of making or using an allowable product, previously withdrawn from consideration as a result of a restriction requirement, is hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on 06/13/2008 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be

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subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Allowable Subject Matter

Claims 1-2 & 4 are allowed.

The following is an examiner's statement of reasons for allowance:

The claimed invention is to a R-Fe-B alloy based thin film magnet comprising an R-Fe-B alloy containing 28 to 45 percent by mass of R element, where R represents at least one type of rare-earth lanthanide elements. The R-Fe-B alloy film is deposited on a base material by a physical film forming method into the alloy film that has a thickness is 0.2 to 400 microns. The R-Fe-B based alloy has a composite texture with $R_2Fe_{14}B$ crystals grown by heat treatment with crystal grain diameter of 3 to 30 microns. The crystal grain diameters are larger than a single-magnetic-domain grain diameter and a plurality of magnetic domains are present in the crystal grains. The R-element-rich grain boundary phases are formed by heat treatment. The grain boundary phases are present at boundaries between the crystals and the R-Fe-B alloy has a nucleation type coercive force. The prior art does not teach the claimed invention.

The closest prior art, Sagawa US 5,194,098, teaches (in the 5th embodiment) a rare earth film, where R is 8-30 percent, and consists of Yttrium (a rare earth lanthanide element), Fe and B. Crystals are present (Col. 3, Line 19-26). However, Sagawa fails

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to teach, suggest or render obvious a thin film R-Fe-B rare earth magnet with a composite texture R-Fe-B based crystals have crystal grain diameters from 3 to 30 microns which is larger than the single magnetic domain grain diameter and where a plurality of magnetic domains are present. The magnet in Sagawa is different in the process of producing the film and the material properties, as argued by applicant. This is due to the difference in the texture obtained by the film forming method. The texture changes the magnetization characteristics of the thin film and produces a nucleation type coercive force based on the size of the crystal grains. Sagawa is a single domain particulate type magnet and discloses that it is virtually impossible to produce a magnetic ribbon (thin film) permanent magnet for any practical purpose (Col. 2, Line 22-26).

Further, Nomura et al. US 2004/0094237 discloses a rare earth permanent magnet structured with a hard magnetic phase of $R_2Fe_{14}B$ present as the primary phase and grain boundary moieties surround the primary phase grains (Paragraph 5). However, Nomura fails to teach or render obvious that the crystal grain diameter of 3 to 30 microns and is larger than the single magnetic grain diameter where a plurality of magnetic domains are present in the crystal grains. Additionally Nomura does not disclose a rare earth permanent magnet thin film.

Based on the art of record, it would not have been obvious to modify the claimed structure to arrive at applicants R-Fe-B sintered magnet thin film as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GARY D. HARRIS whose telephone number is (571)272-6508. The examiner can normally be reached on 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached on 571-272-1291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Ruthkosky/
Supervisory Patent Examiner, Art Unit 1785

/G. D. H./Gary Harris
Examiner, Art Unit 1785